

# Notice of Allowability

Application No.

10/618,840

Examiner

Joon H. Hwang

Applicant(s)

RIPLEY ET AL.

Art Unit

2166

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to a telephone interview with Douglas D. Russell (Reg. No. 40,152) on 9/18/07.
2. ☒ The allowed claim(s) is/are 1-13, 15-38 and 40-52 (renumbered as 1-50).
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All b) ☐ Some\* c) ☐ None of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

## Attachment(s)

- |  |   |
|--|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892)   | 5. <input type="checkbox"/> Notice of Informal Patent Application                     |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 6. <input type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date _____ |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),<br>Paper No./Mail Date _____    | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment                   |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance  |
|  | 9. <input type="checkbox"/> Other _____   |

### **DETAILED ACTION**

1. The applicants filed a petition to revive on 3/9/07. The petition is granted on 7/30/07.

The applicants amended claims 1, 4, 13, 16-20, 24-25, 27-33, 35, 41-45, 49-50, and 52 in the amendment filed on 3/9/07.

The pending claims are 1-52.

### ***Terminal Disclaimer***

2. The terminal disclaimer filed on 3/9/07 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of U.S. Patent No. 6,829,606 has been reviewed and is accepted. The terminal disclaimer has been recorded.

### **EXAMINER'S AMENDMENT**

3. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.
4. Authorization for this examiner's amendment was given in a telephone interview with Douglas D. Russell (Reg. No. 40,152) on 9/18/07.
5. The application has been amended as follows:

Rewrite claim 1 as follows:

"1. A method for performing similarity searching by remote scoring and aggregating, comprising the steps of:

- receiving a request by a similarity search server from one or more clients for initiating a similarity search, the request designating an anchor document and at least one search document;
- generating one or more SQL commands from the client request;
- sending the SQL commands from the similarity search server to one or more remote database management systems;
- executing the SQL commands in the remote database management systems using user defined functions, including computing attribute token similarity scores for corresponding leaf nodes of the anchor document and a search document using designated measure algorithms, multiplying each attribute token similarity score by a designated weighting function, and aggregating the attribute token similarity scores using designated choice algorithms for determined normalized search document similarity scores;
- returning the normalized search document similarity scores to the similarity search server from the one or more remote database management systems; and
- constructing a search result and sending a response selected from the group consisting of the search result, an error message and a warning message to the one or more clients.";

Rewrite claim 3 as follows:

"3. The method of claim 1, wherein the step of executing SQL commands further comprises using user defined functions contained within libraries of the database management systems for implementing measure algorithms to determine attribute token similarity scores, weighting functions and the choice algorithms for determining normalized search document similarity scores, the normalized search document similarity scores being returned to the similarity search server.";

Rewrite claim 4 as follows:

"4. The method of claim 1, wherein the step of executing the SQL commands further comprises:

computing attribute token similarity scores having values of between 0.00 and 1.00; and

aggregating the attribute token similarity scores for determining a document similarity score having a normalized value of between 0.00 and 1.00 for the search document.";

Rewrite claim 5 as follows:

"5. The method of claim 2, wherein the step of generating one or more query commands comprises:

populating an anchor document with search criteria values;

identifying documents to be searched;

defining semantics for overriding parameters specified in an associated schema document;

defining a structure to be used by a result dataset; and  
imposing restrictions on the result dataset.”;

Rewrite claim 7 as follows:

“7. The method of claim 1 wherein the step of executing the SQL commands further comprises structuring the normalized search document similarity scores by imposing restrictions on the normalized search document similarity scores according to a designated user defined function and returning restricted results to the similarity search server.”;

Rewrite claim 8 as follows:

“8. The method of claim 7, wherein the step of imposing restrictions is selected from the group consisting of defining a range of the normalized search document similarity scores to be selected and defining a range of percentiles of the normalized search document similarity scores to be selected.”;

Rewrite claim 9 as follows:

“9. The method of claim 1 wherein the step of executing the SQL commands further comprises sorting the normalized search document similarity scores according to

a designated user defined function and returning sorted results to the similarity search server.”;

Rewrite claim 10 as follows:

“10. The method of claim 1 wherein the step of executing the SQL commands further comprises grouping the normalized search document similarity scores according to a designated user defined function and returning grouped results to the similarity search server.”;

Rewrite claim 12 as follows:

“12. The method of claim 1, wherein the step of executing the SQL commands to determine the normalized search document similarity scores further comprises computing a normalized similarity score having a value of between 0.00 and 1.00, whereby a normalized similarity indicia value of 0.00 represents no similarity matching, a value of 1.00 represents exact similarity matching, and values between 0.00 and 1.00 represent degrees of similarity matching.”;

Rewrite claim 13 as follows:

“13. The method of claim 1, further comprising the steps of:  
receiving a schema instruction from the one or more clients;  
generating a schema command document including the steps of:  
defining a structure of target search terms in one or more search documents;

creating a mapping of database record locations to the target search terms;  
listing semantic elements for defining measures, weights and choices to be used  
in similarity searches; and  
storing the schema command document into the remote database management  
systems.”;

Cancel claim 14;

Rewrite claim 15 as follows:

“15. The method of claim 1, wherein the step of constructing and sending a  
response to the one or more clients further comprises sending a response to the one or  
more clients containing result datasets, each result dataset including at least one  
normalized search document similarity score, at least one search document name, a  
path to search documents having a returned score, and at least one designated  
schema.”;

Rewrite claim 16 as follows:

“16. The method of claim 1, wherein the step of executing the SQL commands in  
the remote database management systems comprises executing one coalesced SQL  
search command to generate all similarity scores of multiple search documents for  
maximizing processing once records have been loaded into memory and minimizing a  
number of disk accesses required.”;

Rewrite claim 17 as follows:

"17. The method of claim 1, wherein the step of executing the SQL commands comprises executing SQL commands in multiple remote database management systems for increased performance, each remote database management system containing a partition of a total target database to be searched.";

Rewrite claim 24 as follows:

"24. A system for performing similarity searching by remote scoring and aggregating, comprising:

- a similarity search sever for receiving a request from one or more clients for initiating a similarity search, the request designating an anchor document and at least one search document;
- means for generating one or more SQL commands from the client request;
- means for sending the SQL commands from the similarity search server to one or more remote database management systems;
- means for executing the SQL commands in the remote database management systems using user defined functions, including computing attribute token similarity scores for corresponding leaf nodes of the anchor document and a search document using designated measure algorithms, multiplying each attribute token similarity score by a designated weighting function, and aggregating the attribute token similarity scores



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using designated choice algorithms for determining normalized search document similarity scores;

means for returning the normalized search document similarity scores to the similarity search server from the one or more remote database management systems; and

the similarity search server for constructing a search result and sending a response selected from the group consisting of the search result, an error message and a warning message to the one or more clients.”;

Rewrite claim 25 as follows:

“25. The system of claim 24, wherein the similarity search server for receiving a request includes a gateway connected to a client network, the gateway also connecting to a search manager and a virtual document manager.”;

Rewrite claim 29 as follows:

“29. The system of claim 24, wherein the means for returning the normalized search document similarity scores is the remote database management systems connected to a database network, the database network connecting to a database network interface of the similarity search server.”;

Rewrite claim 31 as follows:

"31. The system of claim 24, wherein the similarity search server for sending a response to the one or more clients includes a gateway connected to a search manager and a virtual document manager within the similarity search server, the gateway connecting to the one or more clients via a client network.";

Rewrite claim 32 as follows:

"32. The system of claim 24, wherein the user defined functions are contained within libraries of the remote database management systems for implementing measure algorithms to determine attribute similarity scores, weighting functions and choice algorithms to determine normalized search document similarity scores, the normalized search document similarity scores being returned to the similarity search server.";

Rewrite claim 33 as follows:

"33. The system of claim 24, wherein user defined functions are contained within libraries of the remote database management systems for imposing restrictions on the normalized search document similarity scores, sorting the normalized search document similarity scores and grouping the normalized search document similarity scores, the normalized search document similarity scores being returned to the similarity search server.";

Rewrite claim 34 as follows:

"34. The system of claim 33, wherein the imposition of restrictions is selected from the group consisting of definition of a range of the normalized search document similarity scores to be returned to the similarity search server and definition of a range of percentiles of the normalized search document similarity scores to be returned to the similarity search server.";

Rewrite claim 35 as follows:

"35. The system of claim 24, wherein user defined functions are contained within libraries of the remote database management systems for determining statistics according to a designated user defined function, statistic results being returned to the similarity search server.";

Rewrite claim 36 as follows:

"36. The system of claim 32, wherein the normalized search document similarity scores comprise a value of between 0.00 and 1.00, a normalized similarity value of 0.00 representing no similarity matching, a normalized similarity value of 1.00 representing exact similarity matching, and normalized similarity values between 0.00 and 1.00 representing degrees of similarity matching."

Rewrite claim 38 as follows:

"38. The system of claim 24, further comprising:  
a gateway for receiving a schema instruction from the one or more clients;

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a virtual document manager for generating a schema command document, including:

a structure of target search terms in one or more search documents;

a mapping of database record locations to the target search terms;

semantic elements for defining measures, weights and choices to be used

in similarity searches; and

the remote database managements for storing the schema command document.”;

Cancel claim 39;

Rewrite claim 40 as follows:

“40. The system of claim 24, wherein the similarity search server for constructing and sending a response to the one or more clients further comprises a gateway for sending a response to the one or more clients containing result datasets, each result dataset including at least one normalized search document similarity score, at least one search document name, a path to search documents having a returned score, and at least one designated schema.”;

Rewrite claim 41 as follows:

“41. The system of claim 24, wherein the means for executing the SQL commands in the remote database management systems comprises one coalesced

SQL search command to generate all similarity scores of multiple search documents for maximizing processing once records have been loaded into memory and minimizing a number of disk accesses required.”;

Rewrite claim 48 as follows:

“48. The system of claim 24, wherein:

the similarity search server for receiving a request from one or more clients is via a secure client network connection; and

the similarity search server for sending a response to the one or more clients is via a secure client network connection.”;

Rewrite claim 49 as follows:

“49. The system of claim 24, wherein:

the means for sending the SQL commands from the similarity search server to one or more remote database management systems is via a secure database network connection; and

the means for returning the normalized search document similarity scores to the similarity search server from the one or more remote database management systems is via a secure database network connection.”;

Rewrite claim 50 as follows:

"50. A system for performing similarity searching by remote scoring and aggregating, comprising:

one or more clients communicating with a similarity search server for requesting a similarity search between an anchor document and at least one search document;

the similarity search server processing the similarity search request and constructing one or more SQL commands from the similarity search request;

the similarity search server communicating with one or more remote database management systems for transmitting the one or more SQL commands;

the one or more remote database management systems executing the SQL commands to obtain a similarity search result between the anchor document and the at least one search document by computing attribute token similarity scores for corresponding leaf nodes of the anchor document and a search document using designated measure algorithms, multiplying each attribute token similarity score by a designated weighting function, and generating the attribute token similarity scores using designated choice algorithms for determining a normalized similarity search result;

the one or more remote database management systems communicating with the similarity search server for transmitting the similarity search result; and

the similarity search server processing the similarity search result and communicating with the one or more clients for transmitting a similarity search response selected from the group consisting of the similarity search result, an error message and a warning message to the one or more clients."; and

Rewrite claim 52 as follows:

"52. The system of claim 50, further comprising a secure database network connection for transmitting the one or more SQL commands and the similarity search result between the one or more remote database management systems and the similarity search server."

6. The claims are 1-13, 15-38, and 40-52 are pending.

***Allowable Subject Matter***

7. Claims 1-13, 15-38, and 40-52 are allowed.

Claims 1, 24, and 50 identify the distinct features, a request for a similarity search of an anchor document and at least one search document; executing the SQL commands in the remote database management systems, including computing attribute token similarity scores for corresponding leaf nodes of the anchor document and a search document using designated measure algorithms, multiplying each attribute token similarity score by a designated weighting function, and aggregating the attribute token similarity scores using designated choice algorithms for normalized search document similarity scores/a normalized similarity search result; and sending a response selected from the group consisting of the search result, an error message and a warning message to the one or more clients, which are not taught or suggested by the prior art of records. The closest prior art, Wheeler et al. (U.S. Patent No. 6,738,759) disclosing a similarity search of documents, fails to suggest the claimed limitations as mentioned

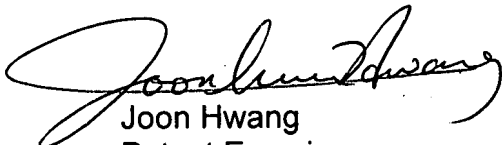
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above in combination with other claimed elements. The above features in conjunction with all other limitations of the dependent and independent claims 1-13, 15-38, and 40-52 are hereby allowed.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joon H. Hwang whose telephone number is 571-272-4036. The examiner can normally be reached on 9:30-6:00(M~F).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hosain T. Alam can be reached on 571-272-3978. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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9/18/07